SIR OLIVER LODGE'S BRITISH ASSOCIATION ADDRESS

EDWIN H. HALL
HARVARD UNIVERSITY

The list of Sir Oliver Lodge's writings is long and varied, ranging from school text-books in elementary science through *The Ether of Space, School Reform, Life and Matter, Reason and Belief,* to *The Survival of Man.* With most of these writings I have no direct acquaintance, but on the mere evidence of their titles one may with reasonable safety venture certain particulars toward an estimation of their author. He must have intellectual vigor, he must have an instinct for vital questions, he must have the power of popular exposition, and, finally, he cannot be overcautious in the formation and expression of his opinions. All of these particulars would, I believe, be found also in any consensus of judgment that his fellows in science might pass upon his scientific work. This, if not unmixed praise, is much to say for a man, and it may be added that in general he speaks out from a sense of well-being natural to one of cheerful and sturdy temper who has achieved fame, station, ten children, and the confident hope of immortality for all of us. Is it then to be wondered at that he says things which multitudes are glad to hear, and holds a position almost unique in the esteem and confidence of the public at large?

It is more than likely, however, that Lodge would stand better with his fellow-scientists today if his reputation were less general and popular; for his efforts in religio-philosophic discussion and psychical experimentation have distracted him from physics, and they have created against him in the minds of many a feeling akin to distrust—not of course touching his sincerity, but touching

the soundness of his judgment. This feeling may be in some measure deserved by the readiness with which he seems to have fallen a victim to certain impostors; but, on the other hand, it is possible that the majority of scientific men today are a little too sceptical, a little in danger of denying on *a priori* grounds the verity of certain alleged phenomena exploited in psychical research and very widely accepted as matters of fact. To this question I shall return in the course of this paper. Meanwhile it can be said that, whatever the sympathies or prejudices of scientific men in general regarding matters psychical or spiritual, it was only fair that the British Association, after the Presidency of Professor Schäfer and his *Address* in support of the purely mechanistic theory of life, should choose Lodge, an especial champion of the spiritistic theory, to utter a counter-blast.

The title *Continuity*, which Lodge's *Address* bears, was shrewdly chosen; for under it he had warrant for the discussion of questions now rife in various fields of science and in philosophy as well. Moreover, the word *Continuity* is a good battle-cry for the conservative. Who does not shrink instinctively from the suggestion of ruin and chaos conveyed by the description *Discontinuity*, which the opposing cause must bear? And yet, undoubtedly, during the last decade or two there has been a movement, in more than one field of profound research or speculation, away from theories which express and celebrate the aspect of uniformity in the operations of nature toward theories which look for, and make the most of, failures of such uniformity. Thus in biology we have seen the "mutation theory" of De Vries, a theory of the sudden, apparently spontaneous, appearance of new species of plants or animals, as descendants of other species, challenging the Darwinian theory of evolution by insensible gradations of change. In physics we have had, if not a recrudescence of Newton's "corpuscular

theory" of light, at least a determined assault on the long and serenely established doctrine of light-waves moving through an all-pervading ether. We have the now almost universally accepted idea of electrons, or definite units, thus far to us indivisible, of electricity. We have Planck's *quantum* conception, according to which the energy of individual molecules comes and goes in quantities of a fixed size, or in multiples thereof, as money circulates in pieces of a definite lower limit. Bergson, the most popular of philosophers, tells us, I believe, that what looks like perfectly continuous existence is really an unending process of extinction and re-creation, that the stone post by the roadside is no more the same stone post that was there a thousandth of a second ago than one pea is the same pea as another that looks exactly like it. Indeed, without further illustration we may sum up current tendencies of thought by saying, in Lodge's own words, "So far from Nature not making jumps (*nihil per saltum*), it becomes doubtful if she does anything else."

In only two of the many quarters where the contest between Continuity and Discontinuity is active does this *Address* seriously engage the field of the much debated light-bearing ether and the field of human personality. With the problems of these two fields Lodge has long been familiarly occupied.

The conception of an inter-stellar medium, which may be called *the ether*, has appeared to be a necessary one ever since the undulatory theory of light was framed and generally accepted in the early part of the nineteenth century; but this conception has always involved properties and relations of the ether difficult to reconcile with the particulars of our knowledge concerning ordinary matter. One of the most troublesome questions raised by it has been whether, for example, the ether close to our earth moves through space with the earth or remains at rest with respect thereto, or effects some compromise

of behavior, as water does through which a solid travels. To answer this question, if possible, Professor Michelson, then of Cleveland but now of Chicago, undertook many years ago, at first alone but afterwards with the help of Professor Morley, also at that time in Cleveland, an experiment to determine whether the time required for light to travel a certain measured distance in the direction of the earth's orbital motion, around the sun, is perceptibly different from the time required for it to travel a like measured distance at right angles with this direction. If the ether through which this light travels is carried along with the earth and at the same velocity, so that there is no relative motion of this ether with respect to the earth near it, we should expect the time required, in the two cases above-described, to be equal. But if the earth in its orbital motion rushes past or through the adjacent ether, as a railroad train rushes through the air close by it, we should expect the time required, in the two cases mentioned, to be different, very much as we should expect the time required for sound to travel a mile in the direction of the wind to be different from the time required for it to travel a mile across the wind or in still air.

The theory of the Michelson-Morley experiment was really more complicated than the simple idea of it here given would indicate; for we have no very accurate and sensitive means of making directly the desired comparison of times. On the other hand, we have extremely effective and precise methods of comparing the times required by light to go forward and back on two equal paths at right angles with each other. But will this serve? Do we not, in taking the time of travel forward and back, eliminate the effect of the relative motion of the earth and the ether, if such relative motion exists? To illuminate this question by analogy, let us suppose that a messenger is required to go from a carriage which

is moving at a uniform rate on a straight road to another carriage moving at the same rate on the same road, but a certain distance behind, and then to return to the first carriage. Will the time required by the messenger, who is supposed to travel with a fixed speed, be the same in the end as if the two carriages were at rest? Evidently not; for if the carriages are moving faster than the messenger can go, he will not be able to overtake the first carriage at all; and if they travel almost as fast as he does, he will lose much more time than he gains by their motion. Now the velocity of light, the messenger, is very much greater than the velocity of the two stations on the earth between which it is sent back and forth; but some slight effect of the assumed relative motion of the earth and the ether might be expected to remain, what is called an effect of the second order. This is what Michelson and Morley looked for; then Morley and Miller, all at Adelbert College or at the Case School in Cleveland. They did not find it, though they did their work so well that no one thinks it worth while to try their experiment again. If the effect looked for is to be found, it must be found in some other way, and no more promising way has yet been devised.

Are we then to conclude that there is no relative motion of the kind imagined, and that the ether near the earth is carried along with it, without relative slip? There are serious objections to this theory of the matter. It would be tedious to detail them or even to enumerate them. I will mention only one, which is based on experiments made by Lodge himself and is set forth by him in brief as follows: "The experiments are described in the Philosophical *Transactions* of the Royal Society for 1893 and 1897, and the conclusion is that when a mass of steel or iron is spinning so fast that it is likely to fly to pieces, and when light is sent by mirrors round and round many times in its immediate neighborhood—so

close as to be actually grazing the spinning disks in some instances—not the slightest effect of acceleration is manifested by the beam of light, however delicately it is tested by means of interference bands. Interference is arranged between beams which have travelled half with and half against the motion, for many yards; but, after spurious results are allowed for, there is no shift of the bands; proving that the velocity is not affected by so much as one-tenth of one per cent. of the velocity of the moving matter. Practically we may say that the ether of space is never carried forward—presumably not even by a planet."

Here we have two directly opposing inferences from experiments—1st, *The ether adjacent to a moving body of ordinary matter must have the same velocity as this body;* 2d, *The ether adjacent to such a body is entirely unaffected by the motion of the body and remains at rest.*

In such a head-on collision of propositions, each supported by admirable experimental evidence, some disruption of old ideas must occur. Conservatives, among whom Lodge is prominent, retain their faith in the veritable existence of a light-bearing ether, which is to be considered at rest in the universe, except for motions within itself; that is, the ether, as a whole, is supposed to have no progressive motion through space. Accordingly the motion, with respect to the ether, of ordinary bodies, is to be taken as their real, or absolute, motion. To account for the failure of the Michelson-Morley attempt to detect such absolute motion it is sufficient to suppose that, when any body which has been at rest with respect to the ether is set into motion in any particular direction, its dimension parallel to this motion is slightly diminished and its dimensions at right angles with the motion are slightly increased, the ratio of change being the same for all kinds of bodies which have thus far been tested in this respect.

This suggestion of change of dimensions, in consequence of motion through the ether, was made independently by Lorentz in Holland and by Fitzgerald in England, twenty-two or more years ago, in order to account for the negative result of the Michelson experiment; but it is not now retained simply for this purpose. Lodge, after giving a graphic account of the way in which the idea came to and came from Fitzgerald, in Lodge's study at Liverpool, adds: "And is such a hypothesis gratuitous? Not at all: in the light of the electrical theory of matter [which Lorentz especially has developed] such an effect ought to occur. The amount required by the experiment, and given by the theory, is equivalent to the shrinkage of the earth's diameter by rather less than three inches in the line of its orbital motion through the ether of space."

It is plain enough that even the conservatives have submitted, during the last twenty-five years, to a very important change of ideas with respect to the relations of the ether and ordinary matter, but nothing short of a revolution will satisfy certain turbulent spirits. These prefer to believe not only that relative motion of the ether and ordinary matter cannot be discovered, but that it does not exist; that, in short, the ether is a fiction, and they propose to get on without it in their theory of the universe. The result is the doctrine of Relativity, in its most pronounced form. The prime mover in this assault upon the established order of thought was Einstein, an official in the Swiss Patent Office. In various aspects the agitation in favor of Relativity may be compared with another movement, also of Swiss origin, revolution toward the initiative and referendum in politics.

Relativity in its thorough-going form involves the interdependence of time and space, and its exponents speak of time as a "fourth dimension." Since the fourth

dimension seems to most of us a kind of fairyland and not a real place to live in, I make haste to say that some writers put this proposition into a comparatively homely and unalarming shape. Thus Professor R. D. Carmichael, who has written a good little book[1] on Relativity, says: "I have no intention of asserting that time is a fourth dimension of space in the sense in which we ordinarily employ the word 'dimension'; such a statement would have no meaning. I wish to point out rather that it is in some measure connected with space, and that in many formulæ it must enter, as it would if it were essentially and only a fourth dimension." But even so the conception is too formidable to be approached more closely in this paper. It will be enough, perhaps, if I state what is to me the most startling result arrived at in this effort to get on without the ether—namely, the conclusion that there is no such thing as a *now*, or *the present instant*, for the physical universe as a whole. In the words of Professor Carmichael, "There is no such thing as the absolute simultaneity of events happening at different places." This demonstration is likely to be regarded as a marvellous triumph of the theory of Relativity or as a *reductio ad absurdum*, according to the philosophical predilections of the inquirer. Lodge is far from standing alone in his unwillingness to accept it and in his preference for the conception of a luminiferous ether, modified as this conception has been modified by Lorentz and others during the past two or three decades.

This matter of the ether and of relativity is so important, in philosophy as well as in science, that I have not felt free to dismiss it with a mere allusion, but it may well be that the chief interest of Lodge's *Address* for most readers of this *Review*, will attach to that part

[1] The Theory of Relativity, John Wiley & Sons, 1913. Science, February 13, 1914, contains an interesting review, by Professor Edwin B. Wilson, of this book.

which treats of the problem of human existence and of the revelations, if they really are such, of psychical research. In one respect this part may prove disappointing. Whether taught caution by some rather mortifying experiences in giving credence to seers and wonder-workers, afterwards proved impostors, or solemnly impressed by the responsibility of his official position, Lodge speaks, in this notable summing up of his observations and reflections, with a dignity and a moderation not always to be found in his habitual utterances. He brings forward nothing new in the form of occult phenomena; in fact, he goes into no details, relates no incidents, and avoids the technical language of psychical research.

In this policy, though sacrificing perhaps a certain piquancy of interest which may have been looked for in his *Address*, he was doubtless well advised. If it be true, as I have heard it intimated, that he was urged to be altogether silent on this occasion concerning matters psychical, we must respect his refusal to comply, in view of his own opinion of the overwhelming importance of this subject in its present state of development. But it is plain enough that he would have gained nothing for the cause he advocated by insisting upon presenting it *in extenso* before an unsympathetic and impatient audience.

In describing the audience thus I have in mind the members proper of the British Association and not the general public which may have furnished most of the hearers. I assume too that, as a whole, British scientific men are not very different from American scientific men in their opinions and prejudices concerning the questions investigated by the Society for Psychical Research. Avoiding the deeper mysteries and keeping to what many intelligent people regard as the almost commonplace phenomenon of telepathy—communication between minds by other means than the ordinary senses—one

upon inquiry finds the leaders of scientific thought in America profoundly sceptical, perhaps even disposed on *a priori* grounds to deny the existence of the alleged action. I suspect that in any distinguished scientific company in our country a member suggesting the verity of telepathy as an open question worthy of some attention would be generally regarded as showing unfortunate mental symptoms.

That Lodge is thoroughly conscious of a general lack of sympathy, among his British colleagues in science, for his psychical opinions and beliefs, appears plainly enough in the following statement, admirable in form and temper, which is made near the end of the *Address:*

"In justice to myself and my co-workers I must risk annoying my present hearers, not only by leaving on record our conviction that occurrences now regarded as occult can be examined and reduced to order by the methods of science carefully and persistently applied, but by going further and saying, with the utmost brevity, that already the facts so examined have convinced me that memory and affection are not limited to that association with matter by which alone they can manifest themselves here and now, and that personality persists beyond bodily death. The evidence—nothing new or sensational, but cumulative and demanding prolonged serious study—to my mind goes to prove that discarnate intelligence, under certain conditions, may interact with us on the material side, thus indirectly coming within our scientific ken; and that gradually we may hope to attain some understanding of the nature of a larger, perhaps etherial, existence, and of the conditions regulating intercourse across the chasm. A body of responsible investigators has even now landed on the treacherous but promising shores of a new continent.

"Yes, and there is more to say than that. The methods of science are not the only way, though they

are our way, of being piloted to truth. '*Uno itinere non potest pervenire ad tam grande secretum.*'"

Whatever the prepossessions of the scientific man, he can hardly quarrel with or criticise the speaker for this brief and dignified declaration of his faith, and it may well be supposed that most readers of the *Theological Review* would be glad to have some presentation and examination of the evidence which has led to the conviction so impressively uttered. Now I do not profess to have made an exhaustive or even a very extensive study of the literature in this field of inquiry, but what I have done should, I think, be told here.

I was an active member of the American Society for Psychical Research for a year or two after its foundation in 1884, and for a time conducted much of its correspondence; but before long I became convinced that the prospect of valuable discoveries through the work of this Society was too small to warrant my continuing in such work to the neglect of my proper engagements. Accordingly I resigned my membership, though retaining a certain interest in the undertakings of those who continued their efforts, and even feeling a sense of indebtedness to them for their persistence. I once had, at the instance of William James, an extended sitting, stenographically reported, with the famous "trance-medium," Mrs. Piper. I read with much care the pamphlet which James wrote in regard to the evidence, obtained through Mrs. Piper, as to the continued existence after death of Richard Hodgson. I have studied with perhaps equal care Lodge's discussion [1] of the "evidential matter which purports to come from deceased members of the S. P. R., among others from the late Mr. Myers." It would be quite out of place here to go into

[1] Evidences of Classical Scholarship and of Cross-Correspondence in Some New Automatic Writings, reprinted in pamphlet form from the proceedings of the S. P. R. for June, 1911.

details regarding such evidence, and I shall do very little more than state the impression made upon me by these two documents. William James seems to me far more critical in his examination of testimony than Lodge is, and far more reserved in his final estimate of its value. The latter believes himself to be critical here, and in a certain sense he is so; but he is critical of the quality rather than doubtful of the source of the communications purporting to come from Myers. Thus on February 10, 1910, having just received through the automatic writer, Mrs. Willett,[1] certain messages which he could not at first understand, in answer to his question, "What does the word Lethe suggest to you?" he writes a letter which begins as follows: "Well Myers, but I want more from you about Lethe and its suggestions than that," etc.

It seems to me probable that both James and Lodge have underestimated the "normal" intelligence, acuteness, and knowledge of the women with whom, as trance-mediums or as automatic writers, they, as investigators of psychic phenomena, have had to do. It would have been very difficult for anyone to impose upon William James by pretence of wit or knowledge; but to pass as a dullard or as an ignoramus in his presence, while keeping the ears and eyes open and the mouth shut, might not perhaps have been so hard.

The most valuable parts of the *Address*, in my opinion, are those in which the speaker makes, as in a passage already quoted, a plea for openness of mind; for openness not merely by way of the avenues of logic and hard reason but by that of sympathy and direct perception, by way of what James called *vision*. Inseparable from this plea is the protest against the mechanistic view of life professed in the *Address* of 1912 by Professor Schäfer. More quotations may well be made here:

[1] An assumed name, I believe.

"The laws of nature are a diagrammatic frame-work abstracted out of the full comprehensiveness of reality." "No mathematician could calculate the orbit of a common house-fly." "To explain the Psychical in terms of Physics and Chemistry is simply impossible." "Do they account for our own feeling of joy and exaltation, for our sense of beauty, for the manifest beauty existing throughout nature? Do not these things suggest something higher and nobler and more joyous, something for the sake of which all the struggle for existence goes on?" "Where full consciousness has entered, new powers arise, and the faculties and desires of the conscious parts of the scheme have an effect upon the whole." "It is not guided from outside but from within, and the guiding power is immanent at every instant." "Of this guiding power we are a small but not wholly insignificant portion."

These thoughts are, to be sure, not new, but they are well expressed. Their importance lies not so much in the authority of the particular speaker who utters them as in the fact that they would be subscribed to, probably, by the great majority of mature-minded scientific men. For these opinions have no necessary connection with the revelations or messages which may come through the machinery of Psychical Research. They are, rather, the product of general human experience and reflection, summed up by what James would have called the dramatic sense for the truth of a situation, the integrating impression of reality or at least of probability. If scientific men are popularly believed to be of different mind from other men in this respect, it is, I think, merely because scientific men, being inclined and trained to precision and responsibility of speech, refuse to repeat creeds which other men urge upon them while saying, in effect, that the exact meaning of these professions is unimportant.

In my opinion Lodge could have spoken the best parts of his *Address* with more effect if he had never been concerned with Psychical Research in its formal shape. What revelations of spiritual import and inspiration may or may not sometime reach us through the avenues which he and his co-workers in this undertaking are striving to open, I shall not here venture to predict; but so far as the matter thus far received goes, even if we accept the interpretation which the investigators themselves put upon it, I find it the opposite of cheering. The impression which I get of the present condition of the personality of Myers, if I take the "messages" at their face value, is that of a dismal state of separation, exile, or incarceration, as one pleases, but in either case not an existence to be desired for one's self or for one's fellows. As support for religious belief, unless the mere expectation of continuing personality, on any terms, after death is regarded as essentially religious and precious, I see no value in these present disclosures, if they indeed are such, of a life after death. There is in them, so far as I am acquainted with them, no suggestion that the spirit has, in any happy sense, returned unto God who gave it. Evil indeed would be the day when those who have felt themselves to be in communion, inarticulate but effectual, with God and with those who are returned to Him, should abandon this mode of intercourse for any thus far indicated by attempts to establish more palpable relations with spirits clad in "ethereal" bodies.[1]

[1] Professor George F. Moore tells us in his History of Religions that "neither in the Old Testament nor in the New is 'spirit' equivalent to 'immaterial.'" I suppose that a like statement would be true concerning the popular conception of spirit or "spirits" in all ages; but it is nevertheless a curious spectacle to see men of science, like Lodge and Crookes and their followers in matters psychical, holding the view that we approach the spiritual by the mere refinement or attenuation of matter.